

### ABSTRACT OF THE INVENTION

The invention provides a method of making  $\geq 4$  kHz repetition rate argon fluoride excimer laser crystal optics. The method includes providing a magnesium fluoride crystal solid precursor, nonmetallically crushing the magnesium fluoride solid precursor to provide a crushed low metal contaminant magnesium fluoride feedstock, providing a magnesium fluoride crystal growth crucible, loading the crushed magnesium fluoride feedstock into the crystal growth crucible, melting the loaded crushed magnesium fluoride feedstock to provide a precrystalline magnesium fluoride melt, growing an oriented magnesium fluoride crystal from the precrystalline magnesium fluoride melt, cooling the grown magnesium fluoride crystal to provide a magnesium fluoride laser optical crystal and forming the magnesium fluoride laser crystal into an excimer laser crystal optic for transmitting a high repetition rate ( $\geq 4$  kHz repetition rate) excimer laser output.

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